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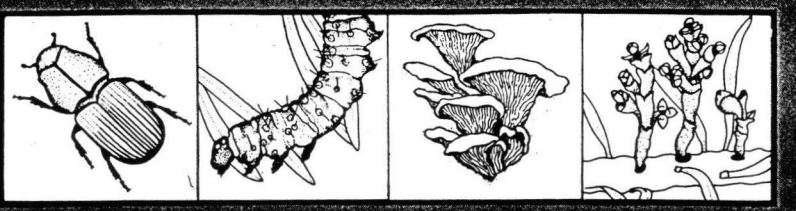

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SPHAEROPSIS BLIGHT OF PONDEROSA PINE IN NORTHERN IDAHO

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ABSTRACT

Ponderosa pine with varying degrees of branch dieback occur in several areas of northern Idaho. Increasing levels of branch dieback have become apparent during the past few years. Isolations from symptomatic branches collected from eighteen locations during 1991 yielded cultures of *Sphaeropsis sapinea* from all but one site. The current prevalence of Sphaeropsis blight in northern Idaho may be related to a combination of weather-related factors which have favored spread and intensification of the disease.

INTRODUCTION

For several years pest specialists with the Idaho Department of Lands and USDA Forest Service have observed ponderosa pine (*Pinus ponderosa* Laws.) with varying degrees of branch dieback in northern Idaho and western Montana. Affected trees have been particularly common along the Clearwater River west of Orofino, Idaho and near Flathead Lake, Montana. Increased numbers of symptomatic trees were evident in some areas during the 1980s. More recently, similar symptoms have been observed for the first time in several other areas in northern Idaho.

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Margarodid scale (*Matsucoccus* spp.), gouty pitch midge (*Cecidomyia piniinopsis* O. S.), black pineleaf scale (*Nuculaspis californica* Coleman), and pine needle scale (*Chionaspis pinifoliae* Fitch) have also been collected from several ponderosa pine. All these pests can cause branch dieback of ponderosa pine. Drought conditions which have prevailed in much of Idaho recently may have weakened ponderosa pine sufficiently to predispose them to damage by insects and diseases.

Because the impact on ponderosa pine could be significant if the branch dieback continues to increase, an investigation was initiated to determine if diseases and/or insects were consistently associated with the branch dieback observed in northern Idaho.

Figure 2.--Ponderosa pine severely infected with *Sphaeropsis sapinea* in Coeur d'Alene, Idaho.

infection (Brookhouser and Peterson 1971; Peterson 1977). After the fungus penetrates needles, it rapidly colonizes needle tissues to the branch. It then kills bark and cambial tissues. As the fungus colonizes the branch, needles die and turn tan to brown (Figure 1). Cambial tissues of infected branches are killed and turn dark brown. There is often a distinct zone where dead cambium meets living cambium, discernable by color differentiation; the fungus is most active and easily isolated from this zone. After 2-3 years of successive infection on the same tree, the top can be extensively damaged (Figure 2).

Sphaeropsis sapinea produces small, black fruiting bodies (pycnidia) on necrotic needles, fascicle sheaths, scales of second-year cones, and bark of infected branches (Figure 3). Spores produced in pycnidia from March through November are typically transparent at first, becoming dark brown as they mature. Most are single celled. Many pycnidia develop on cone scales the year after seeds are shed (Peterson 1981).

Although pine of all ages are susceptible to the disease, older trees appear more severely affected in northern Idaho. It has been suggested this pattern is related to buildup of infection on seed cones which are more common on older trees (Peterson and Johnson 1986). Pine in urban environments seem to be more severely affected in northern Idaho. This may be related to subtle stresses these trees experience such as soil compaction, which are common in urban settings. Sinclair and others (1987) believe that older twigs and branches are damaged only when trees are predisposed by drought, compacted soil, root injury, or excessive heat or shade.

Figure 3.--Pycnidia of *Sphaeropsis sapinea* on ponderosa pine branch with dieback symptoms.

Although pruning branches may improve appearance of lightly infected trees, it will probably not prevent further infections if conditions prevail which favor spread of the disease (Peterson and Johnson 1986).

Severity of Sphaeropsis blight in northern Idaho in the future will probably be dictated by weather conditions. If disease-favorable conditions prevail for the next several years, disease severity will be expected to increase. On the other hand, if weather conditions are not conducive to disease development, decreasing levels of damage may be expected. Disease incidence and severity will be monitored closely during the next several years.

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